

Professional Experience

Postdoctoral Research Associate, College of Information and Computer Sciences, University of Massachusetts, Amherst 2021.09-

Supervisor: Alexandra Meliou

- Project: Interpretable Machine Learning with data-focused explanations.

Research Assistant, Tandon School of Engineering, New York University 2019-2021

Supervisor: Julia Stoyanovich

- Details of the projects can be found at dataresponsibly.github.io.

Research Intern, AT&T Research, New York Summer 2019

Supervisors: Emily Dodwell, Ritwik Mitra, and Balachander Krishnamurthy

- Worked on a project to ensure fairness and transparency for internal AT&T machine learning projects. Developed a diagnostic tool for bias-related issues that can be used by project managers and data scientists at AT&T.

Research Assistant, College of Computing & Informatics, Drexel University, 2015-2018

Supervisor: Julia Stoyanovich

- Worked on a project to quantify fairness in rankings through equalized representation across groups, and proposed a mitigation framework to ensure a fair ranking outcome.

Research engineer, Elite & Resource (start-up company) 2014-2015

Supervisor: Peng Sun

- Worked on a project to model historical data of flood disaster and develop techniques to help with flood prevention. Proposed a model to estimate the probability of future floods using water flow rate of small watershed torrents, which is recognized as a significant signal of potential flood. Our model is integrated as a core component of a national watershed data management system.

Education

Ph.D. in Computer Science, New York University 2021

- Advisor: Julia Stoyanovich, GPA 3.9

- Thesis: Fairness, diversity, and interpretability in ranking

- Committee: Julia Stoyanovich (chair), Sebastian Schelter, Daniel Neill, and Oded Nov

Ph.D. candidate in Computer Science, Drexel University (transferred) 2015-2018

- Advisor: Julia Stoyanovich, GPA 3.98

M.S.E in Computer Science, Beijing Technology and Business University, 2015

- Advisors: Qian Mo and Zhongming Han, GPA 3.51

- Thesis: Detecting web spammers in online shopping websites

- Graduated summa cum laude

B.Eng. in Software Engineering, Beijing Technology and Business University 2012

- Advisor: Qian Mo, GPA 3.45

- Graduated summa cum laude

Research Interest

My primary area of research centers around data management, especially about ethical concerns including fairness, transparency, explainability, and the social impact of the algorithms in data-driven systems.

I am interested in designing algorithms for mitigating undesirable outcomes from automatic decision-making processes and developing tools to apply these algorithms in different applications.

Peer-Reviewed Publications

1. Meike Zehlike, **Ke Yang**, Julia Stoyanovich, “Mapping Normative Frameworks to Fair Ranking”, ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2021), presented as a poster.
2. **Ke Yang**, Joshua R. Loftus, and Julia Stoyanovich, “Causal Intersectionality and Fair Ranking”, in *Proceedings of the 2nd Symposium on Foundations of Responsible Computing* (FORC 2021), arxiv.org/abs/2006.08688.
3. **Ke Yang**, Biao Huang, Julia Stoyanovich, and Sebastian Schelter, “Fairness-Aware Instrumentation of Preprocessing Pipelines for Machine Learning”, in *Proceedings of the 4th Workshop on Human-In-the-Loop Data Analytics, in conjunction with the 2020 ACM SIGMOD/PODS Conference* (HILDA@SIGMOD 2020), Portland, OR, USA.
4. **Ke Yang**, Vasilis Gkatzelis, and Julia Stoyanovich, “Balanced ranking with diversity constraints”, in *Proceedings of the 28th International Joint Conference on Artificial Intelligence* (IJCAI 2019), Macao, China.
5. **Ke Yang**, Julia Stoyanovich, Abolfazl Asudeh, Bill Howe, H.V. Jagadish, and Jerome Miklau, “A Nutritional Label for Rankings” demo in *Proceedings of the 2018 ACM International Conference on Management of Data* (SIGMOD 2018), Houston, USA.
6. Julia Stoyanovich, **Ke Yang**, H.V. Jagadish, “Online Set Selection with Fairness and Diversity Constraints” in *Proceedings of the 21th International Conference on Extending Database Technology* (EDBT 2018), Vienna, Austria.
7. **Ke Yang**, Julia Stoyanovich, “Measuring Fairness in Ranked Outputs” in *Proceedings of the 29th International Conference on Scientific and Statistical Database Management* (SSDBM 2017), Chicago, USA.
8. Zhongming Han, **Ke Yang**, Xusheng Tan, “Analyzing Spectrum Features of Weight User Relation Graph to Identify Large Spammer Groups in Online Shopping Websites” in *Chinese Journal of Computers*, 40(4): 939-954 (2017) (in Chinese).
9. Zhongming Han, **Ke Yang**, Fengmin Xu, Dagao Duan, “Probabilistic Graphical Model for Detecting Spammers in Microblog Websites” in *Journal of Embedded System*, 8(1): 12-23 (2016).
10. Kai Wang, **Ke Yang**, “A method and application system of detecting web spammers” in *China Invention Patent*, (2015) (in Chinese), No. CN201510012860.
11. Qian Mo, **Ke Yang**, “Overview of Web spammer detection” in *Journal of Software*, 25(7): 1505-1526 (2014) (in Chinese).

Working Papers

12. **Ke Yang**, Sebastian Schelter, Julia Stoyanovich, “FairImpact: On the Impact of Data Errors in Model Deployment - Experimental Analysis and Evaluation”, in progress.
13. Meike Zehlike, **Ke Yang**, Julia Stoyanovich, “Fairness in Ranking: A Survey”, in submission, [arXiv version](https://arxiv.org/abs/2205.01234).

Teaching & Advising Experience

Teaching assistant at Drexel University

- Fundamentals of Databases (graduate level), Winter 2017
- Database Systems (undergraduate level), Spring 2017

Research advisor at New York University

- Jensine Raihan (BS in Computer Science), Fall 2020, “Ranking Facts in real datasets”
- Biao Huang (MS in Data Science), Spring 2020, “Fairness-aware instrumentation of pre-processing pipelines for machine learning”
- Samasth Norway Ananda (MS in Computer Science), Spring and Summer 2020, “FairPrep: promoting data to a first-class citizen in studies on fairness enhancing interventions”

Academic Service

Conference Organization

- Technical chair: 4th Workshop on Data Management for End-to-End Machine Learning (DEEM) at SIGMOD 2020

Program Committee Member

- Extending Database Technology (EDBT) 2022
- ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT) 2021
- Workshop on Responsible Recommendation (FAccTRec) 2021
- Workshop on Data Management for End-to-End Machine Learning (DEEM) at SIGMOD 2020, 2021

External Reviewer

- Ethics reviewer, NeurIPS 2021
- ACM Conference on Human Factors in Computing Systems (CHI) 2021
- Information Systems 2019

Student volunteer

- ACM Conference on Fairness, Accountability, and Transparency (ACM FAT*) 2019

Awards, Fellowship, & Honors

- Pearl Brownstein Doctoral Research Award, Tandon School of Engineering, New York University, 2021
- Selected participant, ACM FAccT Ph.D. consortium, 2019
- Student scholarship, FAT* (previous ACM FAccT) 2018
- Fellowship for Doctoral Study, Beijing Technology and Business University, 2015
- Distinguished Master’s Thesis Award, Graduate School, Beijing Technology and Business University, 2015